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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,711	03/05/2002	Sadaaki Mori	4970/0K363	7464

7590 04/14/2005

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EXAMINER

LUM VANNUCCI, LEE SIN YEE

ART UNIT	PAPER NUMBER
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3611

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,711

Applicant(s)

MORI ET AL.

Examiner

Lee Lum

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,9 and 10 is/are rejected.
- 7) ☒ Claim(s) 3-8 and 11-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. A RCE and Amendment were filed 1/28/05.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A. **Claims 1 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Henry et al 6373211 in view of Coles et al 6351050.

Henry discloses an electric power steering apparatus (fig 6) comprising
Torque sensor 73,
Steering assist motor 64 driven to rotate based on the detected torque (col 8, lines 20-27),
Drive circuit (unidentified) for the motor,
Judgement unit 62 including
 sensing the rotational speed of the motor, via speed circuit 16, and,
 judging whether the speed is within a predetermined range (col 8, lines 20-27),
and,
Instruction unit 62 for supplying field-weakening control of the motor to the drive circuit, when it is judged that the speed of the motor is within the range (same, and col 11, lines 11-20).

The reference discloses a brushless motor with rotor and magnets, but does not disclose magnets fixed in recesses in the rotor core. Coles shows this arrangement in fig 2 with
 magnets 301 fixed recesses 302 in rotor core 300 such that they are surrounded on all sides by the rotor core, as disclosed in c4, ln 17-24, and c2, ln 34-42.

While Henry's configuration is functionally equivalent, it would have been obvious to one with ordinary skill in the art at the time the invention was made to include an alternate arrangement, as shown in Coles, to provide a configuration that is more structurally inert, thus increased performance and longevity. This particular arrangement also provides "a motor having a higher impedance, and hence lowered braking torque when a failure occurs" (c2, In 50-52).

B. **Claims 2 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Henry in view of Coles, and in further view of prior art disclosed in the present application.

Coles shows the rotor 26 as comprising recessed magnets 27, but does not show the rotor core as including laminated electromagnetic plates.

In the present application, the Spec, on p 2, middle paragraph, provides this feature as prior art, as does fig 1. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this feature, as shown in prior art, as a functionally equivalent rotor configuration, having a compact yet effective structure.

3. **Claims 3-8 and 11-16** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art does not disclose an electric power steering apparatus comprising, *inter alia*, a brushless motor controlled by controlling a phase of a motor current which is controlled with a PWM-controlled pulse signal,

a judgement unit for determining whether the speed of the motor is within a predetermined range, and

the range is where a root-mean-square value of an alternating signal corresponding to the pulse signal is between 90 and 100 of a maximum root-mean-square value, and where phase control is not performed.

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4. RESPONSE TO REMARKS

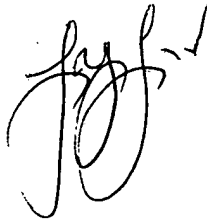
In response to the amendments, Examiner has employed a new reference - Coles 6351050 - in combination with Henry. Coles discloses the recited elements with respect to the "recessed magnets".

5. Communication with the Examiner and USPTO

Any inquiry concerning this communication should be directed to Ms. Lum at 571 272-6649, M-F, 9-5. If attempts to reach the examiner are unsuccessful, her supervisor, Ms. Lesley Morris is at 571 272-6651. Our fax number is 703 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for unpublished applications: private PAIR only, for published applications: private or public PAIR. For more information re PAIR: <http://pair-direct.uspto.gov>. Questions re private PAIR: contact the Electronic Business Center (EBC) at 866 217-9197.

Ms. Lee S. Lum
Examiner
4/12/05

A handwritten signature in black ink, appearing to be 'Lum', with a checkmark to its right.